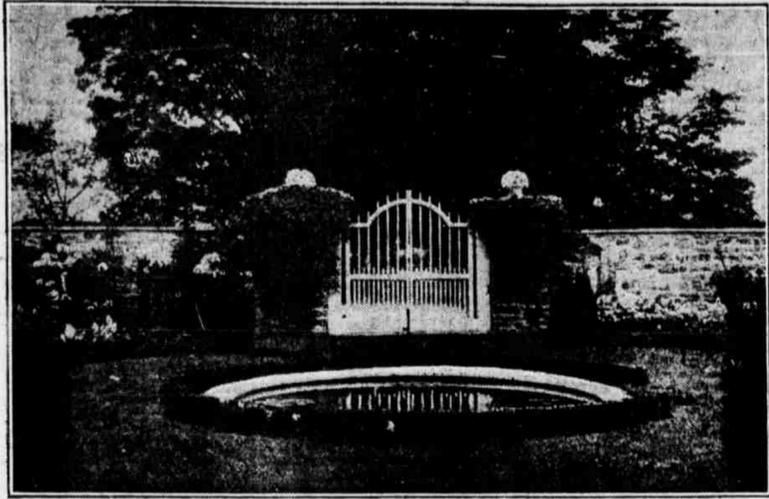


MAKING CONCRETE GARDEN FURNITURE AND ACCESSORIES



Walled background with privet bordered pool.

Concrete Is Adaptable to the Inexperienced Gardener Who Has a Little Leisure, Ingenuity and Zest for Experiment



Gate posts and vases of rough surfaced concrete and glazed tiles in combination.

The process of working concrete is simple, making it full of attraction to the amateur and layworker. It is useful for many purposes and the gardener and homeowner utilize it for making walks, gutters, cribs, arbors, foundations, seats, posts, arbors, basins for water pools, benches, fountains, sundials, vases, plant boxes, hotbeds and cold frame pits and for endless other purposes.

Under exposure concrete has high power of resistance, increasing in strength and hardness with age. Fragments of concrete buildings of prehistoric times have been found in Mexico and Peru and the Romans used the material on a large scale. The military roads of Rome were built on beds of concrete. On the famous Appian Way the paving stones have been worn away, but the underlying bed of concrete is still intact.

Portland cement, as it is called, owing to its resemblance, after setting, to limestone quarried in the Isle of Portland in the English Channel, is composed of calcareous and clayey materials mixed in proper proportions and burned in a kiln to a clinker. The clinker is then ground and the powder resulting is called Portland cement.

John T. Fallon, in "How to Make Concrete" Garden Furniture and Accessories," published by Robert M. McBride & Co., New York, from which the three illustrations appearing with this article are taken, tells the amateur worker how to mix in proper proportions, how to make moulds and generally handle cement and concrete.

Concrete is a manufactured stone, consisting of "aggregates" that is sand, gravel, &c., and cementing materials mixed with water. Portland cement is furnished in cloth bags and paper sacks. The cloth bags are charged for and a credit allowed when the bags are returned. The bags contain 94 pounds of cement and four such make a barrel of 376 pounds.

Cement must be kept perfectly dry until it is used as it will spoil by becoming wet and lumpy.

In storing, lay blocks or beams of wood on the floor, placing boards over them, piling the bags on the boards to permit air circulation under the pile, to keep out dampness. Cover the pile with canvas or roofing paper. Never pile the bags against the outside wall of a building.

Sand, crushed stone and gravel are used as aggregates; the first is called fine and the last two coarse aggregates. Shells, slag and broken brick may be used also. Avoid soft sandstone, soft limestones, slate and shale.

The aggregate must be clean, as the presence of dirt means weakness. Clay or mud forming a coating on the particles of the aggregates, prevents the cement from coming into contact with the surface and lowers the binding power of the cement. The sand should be free from vegetable loam and coarse one-thirtieth to one-eighth inch in diameter.

The water for concrete mixing must be clean. It should not be taken from any stream or pond into which any waste from chemical mills, or other refuse has been dumped. Sea water cannot be used.

In mixing, every grain of sand should be surrounded with cement and every piece of aggregate should be thoroughly surrounded with sand-cement mortar, otherwise the bonding will be defective.

All voids should be eliminated, by such gradation of materials that the spaces between the larger pieces of aggregate will be occupied by the smaller pieces, and the spaces between these in turn be filled by sand, until in a perfectly proportioned mixture there will only remain such voids as will be taken up by the cement paste when the concrete is finally compacted where it is to remain.

Impermeability, or resistance to the passage of water, is one of the most prominent characteristics of good concrete and is dependent upon the elimination of voids. If the concrete is properly proportioned there is no reason for using a waterproofing medium.

This formula will produce satisfactory results under average conditions. One part cement, two and one-half parts sand and four parts coarse aggregate (expressed 1:2 1/2:4) for most construction work.

Where a fine texture is desirable

for ornamental purposes the proportion of cement must be increased, if necessary, to one part cement and one and one-half part sand.

Mixture 1:2:3, one part cement, two parts sand and three parts coarse aggregate is the one to use for one course highways, street and barnyard pavements, floors and walks, roofs, fence posts, water troughs and tanks.

Mixture 1:2, one part cement, two parts sand for facing blocks and similar products.

Concrete should be mixed as near as possible to the place where it is to be used. Mix small batches at a time and should the cement begin to harden before being placed in the forms, so it lumps discard it.

An essential to thorough mixing is a flat water-tight platform, the boards being laid with tight joints to prevent the cement and water from running through while mixing.

Measure the sand and spread it in a layer of even depth on the mixing platform. Place the cement on top of the sand. First turn these two materials toward the center of the board and then turn them twice or more or until they are thoroughly mixed together, as indicated by a uniform color. Next wet the stone, throw it on top of the mixed cement and sand and turn the whole mass at least three times, water being slowly poured on during the first turning, the quantity varying according to the nature of the work.

In general add sufficient water to give a "mushy" mixture, just too soft to bear the weight of a man when in place. Pails are convenient for measuring the water and enough pails should be provided in advance for wetting the entire batch. Do not use a hoe but use a square pointed shovel in turning the concrete. Push the shovel along the boards under the mass, lift it, then turn the shovel over carefully, depositing the material with a spreading motion.

Three consistencies are in use; the dry, the squishy and the wet. The wet mixture should be wet

enough to be mushy and run off the shovel when handled. It is used for thin walls, &c. It contains sufficient water to permit its flowing from a shovel or wheelbarrow, but not enough to cause a separation of particles.

The squishy mixture is just wet enough to make it jellylike, used for floors, foundations, &c. A man should sink ankle deep in it if he were to step on the pile. It is used in all moulded products requiring reinforcement, such as fence posts, drain tile, &c.

The dry mixture is like damp earth and is used where it is important to have the concrete set as soon as possible, principally in moulded work.

In making moulds or forms, if dry lumber is used it should be thoroughly wet before the concrete is placed. Where any fine ornamentation is used the moulding or other device used to vary the surface should be painted with equal parts of boiled linseed oil and kerosene and the forms must be thoroughly cleaned each time they are used. The face of the forms must be free from loose knots, splinters or other irregularities, as they will be reproduced in the cement. Be careful to have the forms strong enough to hold the weight of the concrete without bulging out of shape.

Fresh, or "green," concrete, as the builders call it, should not be exposed to the sun until after it has been allowed to set five or six days. Each day during that period the concrete should be wet down by sprinkling water on it in the morning and in the afternoon. This is done so the concrete on the outside will not dry out much faster than the concrete in the centre of the mass, and should be observed carefully, especially during the hot summer months. Old canvas, sheeting, burlap, &c., placed so as to hang an inch or so away from the face of the concrete will afford proper protection. Wet this as well as the concrete.

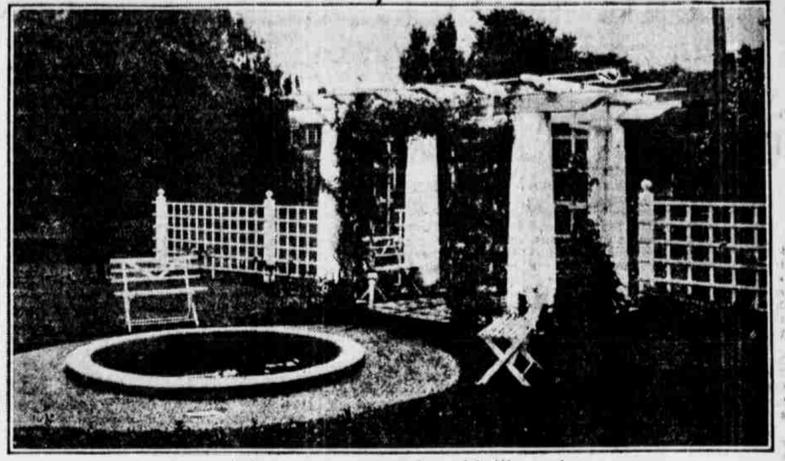
On exterior surfaces a coat of pure cement will check the fine hair cracks resulting from the rapid drying out of the concrete. For the interior of a tank which will be kept wet while in use, a coat of cement will serve to make the concrete water-tight. Put this on as soon as the forms are removed and take off the forms as early as possible. In small pieces, like a small trough, the inner form may be removed in two or three hours and the work applied immediately. Wet the inside thoroughly and apply pure cement with brush or trowel.

Do not attempt to handle concrete in freezing weather. Tables are given by the author for making concrete of various colors, for proper dimensions of retaining and curbing walls. Directions are given for making fence posts, steps, copings, sun dials, benches and other things which space will not permit in this article.

In making concrete sidewalks the foundations should be from 6 to 12 inches deep. If the soil is clay, kind drains of coarse gravel or the pipe should be laid at the lowest points in the excavation to carry off any water that may accumulate. Walks are often ruined by water freezing in the foundations and heaving them out of place.

It is an excellent foundation of porous material is laid, such as cinders, broken stone or screened gravel. The excavation should be three inches wider on each side than the proposed walk. Fill in with the porous material to within four inches of the proposed finished surface, wetting well and tamping in layers. When completed, it will be even and firm but porous. Place 2 inch by 4 inch scantlings, perfectly straight, planed on the inside, on top of the porous foundation the proper distance apart to form the inner and outer edges of the walk. The outside or curb strips should be one or two inches lower than the inner edge of the walk. This will give a slight incline to the finished surface and allow the water to run off. A good rule is to allow three-eighths of an inch slope to every foot of width of walk.

Hardy walks are laid off in equal sections between the scantlings, not larger than six feet square. Fill the spaces with concrete to a depth of three inches with one part cement to two parts clean coarse sand and four to five parts broken stone or screened gravel, then tamp until water begins



Arbor entrance to garden with lily pool.

to show on top. The finishing coat should be one inch thick, of one part cement and one and one-half parts clean, coarse sand or crushed stone screenings. This coat should be spread on before the concrete has taken its set, and smoothed off with a trowel being to thoroughly bond the finishing coat to the concrete base. Cover with boards, straw or tar paper to protect from dirt, currents of air and the hot sun during the process of setting and from traffic for three or four days, and keep moist by sprinkling.

Corrosive sublimate is very poisonous. Keep the solution and treated potatoes away from children and live stock. It corrodes metal, thereby losing strength.

Treat whole potatoes, not cut seed. It is important to use the right strength of solution and to soak no more and no less than the required length of time.

FLOWER HOLDERS.

Strips of lead one inch to two inches wide, curled up into various shapes, are useful for holding cut flowers in.



wide open top dishes. A piece of lead pipe cut on one side and flattened out can then be cut to proper width and made into forms.

TREATING POTATOES BEFORE PLANTING.

The plant pathologists at the New York State College of Agriculture at Ithaca advocate the corrosive sublimate treatment as one preventive of potato diseases. The directions for this treatment as given by the college workers follow:

Soak tubers 1 1/2 hours in a solution made by adding 4 ounces of the powdered corrosive sublimate to every 30 gallons of water.

As the powder is soluble with difficulty in cold water, it should first be dissolved in a quart or more of hot water. Do not use a metal vessel for this purpose.

Wooden troughs or tubs may be used for the treatment, but it is believed that barrels make the handiest containers. An inch hole, fitted with a wooden plug, is made in the side near the bottom of each barrel. The barrels are then set upon a platform high enough so that the solution may be drawn off into a tub or pail.

Fill the barrels with uncut potatoes and cover them with the solution. At the end of one and one-half hours draw off the liquid, empty the tubs and refill. Add more fresh solution to replace that taken up by the treated seed.

Treated tubers should be spread out in shallow piles and allowed to dry. The plants will come through the ground quicker if the seed is permitted to green and start sprouting before planting. Treatment must be made, however, at any time previous to cutting.

Corrosive sublimate solution loses strength with each successive treatment. It should not be used more than three times unless some of the original solution is added, and even then should be thrown away after the fourth usage.

It should be remembered that corrosive sublimate is very poisonous. Keep the solution and treated potatoes away from children and live stock. It corrodes metal, thereby losing strength.

Treat whole potatoes, not cut seed. It is important to use the right strength of solution and to soak no more and no less than the required length of time.

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